REMARKS

Interview request

Applicants respectfully request a telephonic interview after the Examiner has reviewed the instant response and amendment. Applicants request the Examiner call Applicants' representative at 858 720 5133.

Status of the Claims

Pending claims

Claims 1 to 9, 13, 14, 17 to 25, 27 to 30, 34, 36, 37, and 42 to 67 are pending.

Claims added and canceled in the instant amendment

In the present response, new claims 68 to 70 are added and claims 44 and 45 and 51 to 56 are canceled, without prejudice. Thus, after entry of the instant amendment, claims 1 to 9, 13, 14, 17 to 25, 27 to 30, 34, 36, 37, 42, 43, 46 to 50 and 57 to 70 will be pending and under examination.

Outstanding Rejections

Claims 2 to 4, 8, 17 to 22, 28 and 61 are rejected under 35 U.S.C. §112, second paragraph. The rejection of claims 24, 25, 27 to 30, 34, 36, 37 and 42 to 45, under the written description requirement of 35 U.S.C. §112, first paragraph, was maintained, and claims 51 to 56 and 62 (added in Applicants' RCE response of August 15, 2003) were newly rejected under the written description requirement of section 112. The rejection of claims 1 to 3, 5 to 9, 13, 14, 17 to 25, 27 to 30, 34, 36, 37, 42 to 45 under the enablement requirement of 35 U.S.C. §112, first paragraph, was maintained, and claims 46 to 62 and 64 to 67 (added in Applicants' RCE response of August 15, 2003) were newly rejected under the enablement requirement of section 112. Claims 1 to 9, 13, 14, 17 to 25, 27 to 30, 34, 36, 37 and 42 to 67 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claims 1 to 5, 10 to 16, 22 to 31, and 37 to 64 of copending application serial no. (USSN) 10/112,331. Claim 8 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claims 133 to 137 of copending USSN 09/866,400. Claim 8 is provisionally rejected under the judicially created

doctrine of obviousness-type double patenting as allegedly unpatentable over claim 29 of copending USSN 09/112,357. Applicants respectfully traverse all outstanding objections to the specification and rejection of the claims.

Support for the Claim Amendments

The specification sets forth an extensive description of the invention in the new and amended claims.

Drawings

The Examiner noted that substitute Figure 1 submitted in paper 32 (RCE response of August 15, 2003) was not with the file. Please enter re-submitted substitute Figure 1, as submitted in Applicants' response and amendment of April 17, 2003, and replace the originally submitted drawing with the formal drawing enclosed herein.

The amendment (change in the drawing) is based upon the sequence of *Thermococcus alcaliphilus* AEDII12RA α-galactosidase, 18GC, deposited with the ATCC located at 10801 University Blvd., Manassas, VA 20110-2209, on September 10, 2002, and designated as PTA-4654. Accordingly, Applicants submit that no new matter is introduced by the instant amendment.

Informalities/ Specification

Referencing priority documents

In paragraph 8 of the office action, the Patent Office notes that the first paragraph of the specification needs to be amended to comply with 37 CFR §1.78. The instant amendment addresses this issue.

Correcting sequencing errors

In Applicants' last response (of August 15, 2003), substitution of the sequence listing on file with a corrected sequence listing was requested. As noted in the response, upon re-sequencing plasmid 18GC (SEQ ID NO:3, which encodes SEQ ID NO:4; Figures 1A-1C), three nucleotide sequencing errors were found. The correct nucleic acid sequence (based on the re-sequencing) does not result in any amino acid change in the amino acid sequence, SEQ ID NO:4, as originally filed.

Applicants have deposited plasmid 18GC with the ATCC on September 10, 2002. The deposit has been accepted and designated PTA-4654. In Applicants' last response, the ATCC deposit was incorporated into the specification and the substitute sequence listing based upon the deposit and amended drawings were submitted.

In paragraph 9 of the office action, the Patent Office objected to correction of the sequence under 35 USC 132 because it allegedly introduced new matter.

Applicants respectfully aver that this deposit of nucleotide sequences, which were incorporated by reference in the specification, described those sequences sufficiently to the public for purposes of meeting the written description requirement of section 112, first paragraph, see, e.g., Enzo Biochem, Inc. v. Gen-Probe Inc., 296 F.3d 1316; 2002 U.S. App. LEXIS 14328; 63 U.S.P.Q.2D 1609 (Fed. Cir. July 15, 2002):

> In this case, Enzo's deposits were incorporated by reference in the specification. A person of skill in the art, reading the accession numbers in the patent specification, can obtain the claimed sequences from the ATCC depository by following the appropriate techniques to excise the nucleotide sequences from the deposited organisms containing those sequences. '659 patent, col. 13, ll. 27-36. The sequences are thus accessible from the disclosure in the specification. Although the structures of those sequences, i.e., the exact nucleotide base pairs, are not expressly set forth in the specification, those structures may not have been reasonably obtainable and in any event were not known to Enzo when it filed its application in 1986. See '659 patent, col. 3, ll. 40-46 (noting severe time constraints in sequencing DNA). We therefore agree with Enzo that reference in the specification to deposits of nucleotide sequences describe those sequences sufficiently to the public for purposes of meeting the written description requirement.

Addition of information designating the depository, accession number, and deposit date of the deposited biological material in the ATCC after the filing date does not violate the prohibition against new matter. See also MPEP §2163, §2406.01; In re Lundak, 773 F.2d 1216, 227 USPQ 90 (Fed. Cir. 1985).

Drawings

Please enter substitute Figure 1, as submitted in Applicants' response and amendment of April 17, 2003, and replace the originally submitted drawing with the formal drawing enclosed herein. The amendment (change in the drawing) is based upon the sequence of *Thermococcus alcaliphilus* AEDII12RA α-galactosidase, 18GC, deposited with the ATCC

located at 10801 University Blvd., Manassas, VA 20110-2209, on September 10, 2002, and designated as PTA-4654. Accordingly, Applicants submit that no new matter is introduced by the instant amendment.

Objections to the Claims

The Patent Office objected to claims 1 and 27 for grammatical errors. The instant amendment addresses this issue.

Issues under 35 U.S.C. §112, second paragraph

Claims 2 to 4, 8, 17 to 22, 28 and 61 stand rejected under 35 U.S.C. §112, second paragraph, for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The instant amendment addresses the issues presented paragraph 12b of the office action regarding claims 8, 20 and 28.

The term "comprises"

In paragraph 12a of the office action the Patent Office alleges that the term "comprises" as used in claims 2, 3, 21, 22 and 61 is confusing. To address the Office's concerns, Applicants wish to clarify that they use the term "comprises" as an open-ended term. For example, when a polynucleotide comprises a DNA, it can also comprise other compositions, e.g., RNA; or, when a vector comprises a plasmid it can also comprise other compositions, e.g., elements of a virus; etc. See, e.g., Invitrogen Corp. v. Biocrest Mfg., 327 F.3d 1364; 2003 U.S. App. LEXIS 8651; 66 U.S.P.Q.2D (BNA) 1631, 1634 (Fed. Cir. 2003).

Issues under 35 U.S.C. §112, first paragraph

Written Description

Applicants thank the Examiner for withdrawing the written description requirement rejection of pending claims 1 to 9, 13, 14, 17 to 23. Claim 1 is drawn to isolated or recombinant polynucleotides comprising a polynucleotide having at least 70% sequence identity to a polynucleotide encoding an enzyme comprising an amino acid sequence set forth in SEQ ID NO:4 and having alpha galactosidase activity.

However, the written description requirement rejection of pending claims 24, 25, 27 to 30, 34, 36, 37 and 42 to 45, under 35 U.S.C. §112, first paragraph, was maintained, and

claims 51 to 56 and 62 (added in Applicants' RCE response of August 15, 2003) were newly rejected under the written description requirement of section 112.

Claim 24 is drawn to isolated or recombinant polynucleotides comprising a nucleic acid that hybridizes to a polynucleotide that encodes a polypeptide having a sequence as set forth in SEQ ID NO:4 wherein the polypeptide has alpha galactosidase activity, and the hybridizing conditions include 0.9 M NaCl, 50 mM NaH_2PO_4, pH 7.0, 5.0 mM Na_2EDTA, 0.5% SDS, 10x Denhardt's, and 0.5 mg/mL polyriboadenylic acid at 45°C.

While the Patent Office acknowledges that in certain situations one species adequately supports a genus, a remaining concern for the Office is that allegedly only a single representative specie is disclosed, and, the claimed genus (of pending claims 24, 25, 27 to 30, 34, 36, 37, 42 to 45, 51 to 56 and 62) encompasses species having widely variant structures and/or functions. It is alleged that because the instant invention encompasses an unpredictable art, a single representative specie cannot sufficiently describe the claimed genus.

Applicants respectfully aver that a single representative specie can sufficiently describe a claimed genus of nucleic acids when the genus is defined in terms of hybridization under specific conditions to an exemplary specie and the genus encodes an active polypeptide, such as an enzyme, e.g., an alpha galactosidase, and the procedures for identifying species within the scope of the invention were conventional in the art at the time of the invention.

As declared by Dr. Short (please see attached Rule 132 declaration, Dr. Short was an expert in the field of molecular biology and enzyme development at the time of the invention), procedures for identifying nucleic acids that hybridize under specific conditions were conventional and routine in the art at the time of the invention. Furthermore, procedures for identifying nucleic acids that encode active enzymes, e.g., alpha galactosidases, were conventional and routine in the art at the time of the invention. An exemplary assay for identifying polypeptides that have alpha galactosidase activity is described, inter alia, in Example 2 on pages 18 and 19 of the specification. As declared by Dr. Short, successful results, including the identification of nucleic acids that hybridize under specific conditions to SEQ ID NO:3 and encode polypeptides having alpha galactosidase activity, were predictable. Dr Short declares that identification of enzyme-encoding nucleic acids by hybridization under specific conditions to an exemplary nucleic acid, followed by expression of those identified nucleic acids and

screening and identification of enzymatically active polypeptides, was a predictable art at the time of the invention.

Accordingly, Applicants respectfully aver that because the claimed invention encompassed a predictable art at the time of the invention, a single representative specie can sufficiently describe the claimed genus.

However, Applicants respectfully aver that the disclosure describes more that a single specie of nucleic acid encoding SEQ ID NO:4. As stated in the specification, inter alia, on page 3, last paragraph, and the first paragraph on page 5, the invention encompasses polynucleotides which encode an enzyme having an amino acid sequence as set forth in SEQ ID NO:4. For example, page 5, lines 6 to 7, the specification states that degenerate sequences encode the amino acid sequence of SEQ ID NO:4, but have variations in the nucleotide coding sequence. Thus, as declared by Dr. Short, the skilled artisan at the time of the invention would have understood the specification to describe a plurality of nucleic acid species encoding SEQ ID NO:4. As declared by Dr. Short, it would have been a routine task for the skilled artisan at the time of the invention to determine the 6.97e+198 possible nucleic acid sequence combinations that can encode SEQ ID NO:4. Thus, as declared by Dr. Short, the skilled artisan at the time of the invention would have understood that the specification described a plurality of nucleic acid species encoding SEQ ID NO:4.

The Patent Office also alleges that claimed genus encompasses species having widely variant structures and/or functions (see, e.g., page 6, lines 14 to 16, and page 8, lines 10 to 17, of the instant office action). However, the genus of claim 24 (and dependent claims) are drawn to polynucleotides encoding polypeptides having alpha galactosidase activity, not a genus having widely variant functions. To further address this issue, claim 29 has been amended to encompass a probe comprising at least 12 contiguous nucleotides of the polynucleotide of claim 1 or claim 24, wherein the probe can identify by hybridization a nucleic acid encoding an alpha galactosidase, and claim 30 has been amended to encompass a probe comprising at least 12 contiguous nucleotides of a polynucleotide encoding SEQ ID NO:4, wherein the probe can identify by hybridization a nucleic acid encoding an alpha galactosidase. Applicants respectfully aver that claim 34 does not encompass a genus having widely variant functions because it is drawn to nucleic acids that are capable of amplifying a polynucleotide encoding a polypeptide

having alpha galactosidase activity or is capable of hybridizing (under specific conditions) to a nucleic acid encoding a polypeptide having alpha galactosidase activity.

In light of the instant amendment and remarks, Applicants respectfully submit that because the claimed invention was described in the specification in such a way as to reasonably convey to the skilled artisan that the inventors had, at the time the application was filed, possession of the claimed invention, the written description rejection under section 112, first paragraph can be properly withdrawn.

Enablement

The rejection of claims 1 to 3, 5 to 9, 13, 14, 17 to 25, 27 to 30, 34, 36, 37, 42 to 45 under the enablement requirement of 35 U.S.C. §112, first paragraph, was maintained, and claims 46 to 62 and 64 to 67 (added in Applicants' RCE response of August 15, 2003) were newly rejected under the enablement requirement of section 112.

The Patent Office states that the specification is enabling for a polynucleotide encoding SEQ ID NO:4.

However, it is alleged, inter alia, that the specification does not provide reasonable enablement for all polynucleotide variants encompasses by the claims. The Patent Office alleged undue experimentation would be required for a skilled artisan to make or use the entire scope of the claimed invention.

Applicants respectfully maintain (please note Applicants' responses of August 15, 2003, April 17, 2003, and August 09, 2002) that the specification enabled the skilled artisan at the time of the invention to identify, and make and use, a genus of polypeptides having alpha galactosidase activity to practice the claimed invention. To further support that the claimed genus is enabled by the specification Applicants submit for consideration a Rule 132 declaration by Dr. Jay Short, who was an expert in the field of molecular biology and enzyme development at the time of the invention. Dr. Short declares that the state of the art at the time of the invention and the level of skill of the person of ordinary skill in the art, e.g., screening enzymes, and nucleic acids encoding enzymes, for alpha galactosidase activity was very high. As declared by Dr. Short, using the teaching of the specification, one skilled in the art could have selected routine methods known in the art at the time of the invention to express variants of nucleic acids

encoding the exemplary enzyme of the invention and screen them for expression of polypeptides having alpha galactosidase activity. Dr. Short declares that one skilled in the art could have used routine protocols known in the art at the time of the invention, including those described in the instant specification, to screen for nucleic acids encoding polypeptides having a percent sequence identity to SEQ ID NO:4, or active fragments thereof, for alpha galactosidase activity. Dr. Short declares that it was routine to screen for multiple substitutions or multiple modifications of an enzyme-encoding sequence and predictably achieve positive results. As declared by Dr. Short, while the numbers of samples needed to be screened may have been high, the screening procedures were routine and successful results (i.e., finding variant nucleic acids encoding alpha galactosidases) predictable.

Furthermore, Dr. Short declares that it would not have required any knowledge or guidance as to which are the specific structural elements, e.g., amino acid residues, that correlate with alpha galactosidase activity to create variants of the exemplary nucleic acid and test them for the expression of polypeptides or peptides having alpha galactosidase activity. Accordingly, it would not have taken undue experimentation to make and use the claimed invention, including identification of a genus of nucleic acids encoding alpha galactosidases active under various conditions.

Also as declared by Dr. Short, procedures for identifying nucleic acids that hybridize under specific conditions to an exemplary nucleic acid were conventional and routine in the art at the time of the invention. Furthermore, procedures for identifying nucleic acids that encode active enzymes, e.g., alpha galactosidases, were conventional and routine in the art at the time of the invention. An exemplary assay for identifying polypeptides that have alpha galactosidase activity is described, inter alia, in Example 2 on pages 18 and 19 of the specification. Successful results, including the identification of nucleic acids that hybridize under specific conditions to SEQ ID NO:3 and encode polypeptides having alpha galactosidase activity, were predictable. Dr. Short declares that identification of enzyme-encoding nucleic acids that hybridize under specific conditions to an exemplary nucleic acid by screening and identification of enzymatically active polypeptides was routine and predictable at the time of the invention.

Applicants have previously maintained (please see Applicants' responses of August 15, 2003, April 17, 2003, and August 09, 2002) that whether large numbers of compositions (e.g., nucleic acids, enzymes, antibodies) must be screened to determine if a specie is within the scope of a claimed genus is irrelevant to an enablement inquiry. Applicants have cited Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987), where the Federal Circuit stated that enablement is not precluded by the necessity to screen large numbers of compositions, as long as that screening is "routine." Analogously, practitioners of the biological sciences for the instant invention also recognized the need to screen numbers of negatives to find a sample that has the desired properties, e.g., nucleic acids having alpha galactosidase activity. Furthermore, as declared by Dr. Short, the screening procedures used to identify nucleic acids within the scope of the instant invention (e.g., identifying nucleic acids encoding alpha galactosidases) were all well known in the art and conventional at the time this application was filed. All were routine protocols for the skilled artisan. Thus, the skilled artisan using Applicants' written disclosure could practice the instant claimed invention without undue experimentation.

Addressing other specific issues raised in the instant office action, on page 10, first paragraph, the Patent Office alleged that the disclosure is limited to [describing] a single polynucleotide encoding SEQ ID NO:4. However, as discussed above, the disclosure describes more that a single specie of nucleic acid encoding SEQ ID NO:4. As stated in the specification, the invention encompasses polynucleotides which encode an enzyme having an amino acid sequence as set forth in SEQ ID NO:4. For example, the specification on page 5, lines 6 to 7, states that degenerate sequences encode the amino acid sequence of SEQ ID NO:4, but have variations in the nucleotide coding sequence. As declared by Dr. Short, many possible polynucleotide sequence combinations can encode the polypeptide having a sequence as set forth in SEQ ID NO:4, determining these alternative species was routine at the time of the invention and the skilled artisan at the time of the invention would have understood that the specification described a multiplicity of nucleic acid species encoding SEQ ID NO:4.

The Patent Office has also alleged that the single working example in the specification is insufficient to enable the claimed genus of nucleic acids (see the second paragraph, page 10, of the instant specification). As noted above, Example 2 of the specification

on pages 18 and 19 of the specification describes in detail an exemplary assay to determine if a polypeptide is within the scope of the invention. Furthermore, as declared by Dr. Short, many routine, conventional alpha galactosidase activity screening assays were known in the art at the time of the invention. Accordingly, Applicants respectfully submit that at the time of the invention the skilled artisan, using the assay of the specification or any of the many known alpha galactosidase screening assays could routinely, with predictable positive results, screen a genus of polypeptides for alpha galactosidase activity.

In support of its allegation that a single working example in the specification was insufficient to enable the claimed genus of nucleic acids the Patent Office cites University of Rochester v. G.D. Searle & Co., W.D.N.Y., No. 00-CV-1611L (Univ. of Rochester v. G.D. Searle & Co., 249 F. Supp. 2d 216 (W.D.N.Y., 2003). Applicants respectfully maintain that University of Rochester does not support an argument that in an unpredictable art a single working example is insufficient to support a genus of enzyme-encoding nucleic acids; please see further discussion of University of Rochester, below.

The Patent Office has supported its allegation that the state of the art at the time of the invention was highly unpredictable by noting, inter alia, that there is no general or specific guidance in the prior art for predicting the effects of specific amino acid changes/ mutations on a protein. However, Applicants respectfully aver that the ability to predict whether any particular change in an enzyme coding sequence will produce another enzyme-encoding nucleic acid, or not, is irrelevant to the enablement inquiry. The Federal Circuit in In re Wands directed that the focus of the enablement inquiry should be on the amount of experimentation needed, and whether the experimentation needed to practice the invention is or is not "undue" experimentation. As declared by Dr. Short, at the time of the invention it was routine to screen for multiple substitutions or multiple modifications of an enzyme-encoding sequence and predictably achieve positive results, and, at the time of the invention alpha galactosidase screening procedures were conventional and routine and successful results in finding nucleic acids encoding alpha galactosidases predictable. Accordingly, according to Dr. Short, the state of the relevant art at the time of the invention was in fact highly predictable.

The Patent Office alleges that the instant case is analogous to University of Rochester v. G.D. Searle & Co, W.D.N.Y., No. 00-CV-1611L (Univ. of Rochester v. G.D. Searle

& Co., 249 F. Supp. 2d 216 (W.D.N.Y., 2003). Applicants respectfully aver that University of Rochester is not analogous to the instant case and can be clearly distinguished from University of Rochester.

On Feb. 13, 2004, the Federal Circuit published its opinion on University of Rochester appeals from the decision of the United States District Court for the Western District of New York granting summary judgment that United States Patent 6,048,850 ("the '850 patent") is invalid. Univ. of Rochester v. G.D. Searle & Co., 358 F.3d 916; 69 USPQ2d 1886 (Fed. Cir. 2004). The lower court concluded that the patent's claims were invalid for lack of written description and enablement. The Univ. of Rochester (patentee) argued that the district court erred by granting Defendants-Appellees's motion for summary judgment of invalidity for lack of written description and that the court erred by granting their motion for summary judgment of invalidity for lack of enablement. The Federal Circuit affirmed the lower court, and held that the lower court did not err in holding the '850 patent to be invalid for failing to comply with the written description requirement of section 112, first paragraph. In view of the affirmance of the lower court's decision on the written description ground, the enablement issue was considered to be moot and was not discussed. Id. 69 USPQ2d at 1897.

The instant application can be clearly distinguished from University of Rochester in that the '850 patent did not describe any exemplary compound. As noted by the Federal Circuit:

> Second, it is undisputed that the '850 patent does not disclose any compounds that can be used in its claimed methods. The claimed methods thus cannot be practiced based on the patent's specification, even considering the knowledge of one skilled in the art. No compounds that will perform the claimed method are disclosed, nor has any evidence been shown that such a compound was known.

Id. 69 USPQ2d at 1895.

In contrast, the nucleic acids of the claimed genus of the instant invention are described by structure (inter alia, the exemplary SEQ ID NO:3 and SEQ ID NO:4), physico-chemical properties (percent sequence identity and hybridization conditions) and function (alpha galactosidase activity). Thus, University of Rochester can be clearly distinguished from the instant specification.

In fact, the Federal Circuit further distinguished the facts of University of Rochester, which involved the chemical arts (a chemical inhibitor of the Cox2 enzyme), from cases involving genetic material, noting that disclosure of a DNA sequence might support a claim to the complementary molecules that can hybridize to it. The full passage reads:

> We agree with Rochester that Fiers, Lilly, and Enzo differ from this case in that they all related to genetic material whereas this case does not, but we find that distinction to be unhelpful to Rochester's position. It is irrelevant; the statute applies to all types of inventions. We see no reason for the rule to be any different when non-genetic materials are at issue; in fact, where there might be some basis for finding a written description requirement to be satisfied in a genetics case based on the complementariness of a nucleic acid and, for example, a protein, that correspondence might be less clear in a non-genetic situation. In Enzo, we explained that functional descriptions of genetic material can, in some cases, meet the written description requirement if those functional characteristics are "coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics." 323 F.3d at 964 (quoting from the PTO's Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, P1, "Written Description" Requirement, 66 Fed. Reg. 1099, 1106). DNA and RNA are each made up of just four building blocks that interact with each other in a highly predictable manner. Each of those building blocks, or "nucleotides," is characterized by a unique "base": In the case of DNA, the four nucleotides include the bases adenine, thymine, cytosine, and guanine; RNA also includes adenine, cytosine, and guanine, but contains the base uracil in place of thymine. Adenine on one strand of DNA binds, or "hybridizes," to thymine on the other; in RNA, adenine binds to uracil; and in either DNA or RNA, cytosine binds to guanine. Given the sequence of a single strand of DNA or RNA, it may therefore have become a routine matter to envision the precise sequence of a "complementary" strand that will bind to it. Therefore, disclosure of a DNA sequence might support a claim to the complementary molecules that can hybridize to it.
>
> The same is not necessarily true in the chemical arts more generally. [emphasis added]

Id. 69 USPQ2d at 1893, 1894.

Thus, University of Rochester supports the argument that a single nucleic acid specie may support a claim to a genus of complementary nucleic acid molecules that can hybridize to it.

Applicants respectfully submit that the pending claims meet the written description and enablement requirements under 35 U.S.C. §112, first paragraph. In light of the above remarks, Applicants respectfully submit that amended claims are fully enabled by and described in the specification to overcome the rejection based upon 35 U.S.C. §112, first paragraph.

Obviousness-type double patenting

Claims 1 to 9, 13, 14, 17 to 25, 27 to 30, 34, 36, 37 and 42 to 67 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claims 1 to 5, 10 to 16, 22 to 31, and 37 to 64 of copending application serial no. (USSN) 10/112,331. Claim 8 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claims 133 to 137 of copending USSN 09/866,400. Claim 8 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claim 29 of copending USSN 09/112,357. The enclosed terminal disclaimer under 37 CFR §§3.73(B) and 1.321(B) addresses this issue.

CONCLUSION

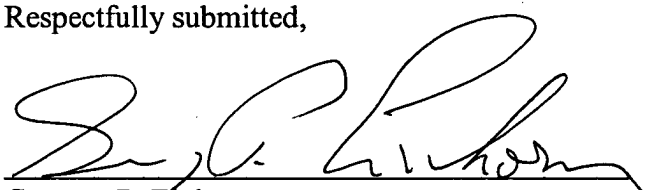
In view of the foregoing amendment and remarks, it is believed that the Examiner can properly withdraw the rejection of the pending claims under 35 U.S.C. §112, first and second paragraphs, and the rejection under the judicially created doctrine of obviousness-type double patenting. Applicants believe all claims pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

Applicants believe that no additional fees are necessitated by the present response and amendment. However, in the event any such fees are due, the Commissioner is hereby authorized to charge any such fees to Deposit Account No. 03-1952. Please credit any overpayment to this account.

As noted above, Applicants have requested a telephone conference with the undersigned representative to expedite prosecution of this application. After the Examiner has reviewed the instant response and amendment, please telephone the undersigned at 858 720 5133.

Respectfully submitted,

Date: April 12, 2004



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